

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claim 1 (Currently Amended): A retarder comprising:

a substrate having a longitudinal direction,

a first optically anisotropic layer formed of a composition comprising a rod-like liquid-crystalline compound, in which the rod-like molecules are aligned homogeneously, and substantially generating a phase difference of Π at 550 nm, and

a second optically anisotropic layer formed of a composition comprising a rod-like liquid-crystalline compound, in which the rod-like molecules are aligned homogeneously, and substantially generating a phase difference of $\Pi/2$ at 550 nm;

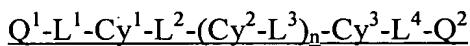
wherein an in-plane slow axis of the first optically anisotropic layer and the longitudinal direction of the substrate cross substantially at +30 degrees, an in-plane slow axis of the second optically anisotropic layer and the longitudinal direction of the substrate cross substantially at -30 degrees, and the in-plane slow axis of the second optically anisotropic layer and the in-plane slow axis of the first optically anisotropic layer cross substantially at 60 degrees,

wherein a rubbing axis of an alignment layer for predetermining an orientation angle of the rod-like molecules in the first optically anisotropic layer and the longitudinal direction of the substrate cross substantially at +30 degrees, and a rubbing axis of an alignment layer for predetermining an orientation angle of the rod-like molecules in the second optically

anisotropic layer and the longitudinal direction of the substrate cross substantially at -30 degrees, and

wherein at least one of the first and second optically anisotropic layers is formed of a composition comprising a rod-like liquid-crystalline compound denoted by Formula (I) below:

Formula (I)

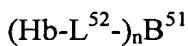


where Q^1 and Q^2 respectively denote a polymerizable group; L^1 and L^4 respectively denote a divalent linking group, L^2 and L^3 respectively denote a single bond or divalent linking group; Cy^1 , Cy^2 , and Cy^3 respectively denote a divalent cyclic group; and n is 0, 1 or 2.

Claims 2 and 3 (Canceled)

Claim 4 (Previously Presented): The retarder of claim 1, wherein at least one of the first and second optically anisotropic layers is formed of a composition comprising a compound denoted by Formula (V) below:

Formula (V)



where Hb represents a C6-40 aliphatic group, or oligosiloxanoxy group having a C6-40 aliphatic group; L^{52} is a single bond or divalent linking group; B^{51} is an n -valent group showing an excluded volume effect and comprising at least three rings and n is an integer from 2 to 12.

Claim 5 (Previously Presented): The retarder of claim 4, wherein B⁵¹ is an n-valent group denoted by Formula (V-a);

Formula (V-a)

(-Cy⁵¹-L⁵³-)_n Cy⁵²

where Cy⁵¹ is a divalent cyclic group; L⁵³ is a divalent linking group selected from the group consisting of a single bond, -alkylene-, -alkenylene-, -alkynylene-, -O-, -S-, -CO-, -NR-, -SO₂- and any combinations thereof; Cy⁵² is an n-valent cyclic group; and n is an integer from 2 to 12.

Claim 6 (Currently Amended): A process for preparing a retarder comprising:

(i) a step of preparing a layer on or above a surface of a substrate having a longitudinal direction and rubbing a surface of the layer in a direction at +30 degrees relative to the longitudinal direction of the substrate, to prepare a first alignment layer capable of aligning rod-like liquid-crystalline molecules in a direction parallel to a rubbing axis,

(ii) a step of applying a composition comprising a rod-like liquid-crystalline compound to the rubbed surface of the first alignment layer and aligning rod-like molecules homogenously in a direction parallel to the rubbing axis of the first alignment layer, to prepare a first optically anisotropic layer generating substantially a phase difference of Π at 550 nm,

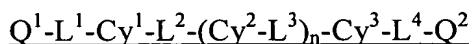
(iii-1) a step of preparing a layer on or above the surface of the substrate and rubbing a surface of the layer in a direction at -30 degrees relative to the longitudinal direction of the substrate, which corresponds to a direction crossing the rubbing axis of the first alignment layer at 60 degrees, to prepare a second alignment layer capable of aligning rod-like liquid-crystalline molecules in a direction parallel to a rubbing axis, or

(iii-2) a step of preparing a layer on or above a rear surface of the substrate and rubbing a surface of the layer in a direction at +30 degrees relative to the longitudinal direction of the substrate, which corresponds to a direction crossing the rubbing axis of the first alignment layer at 60 degrees, to prepare a second alignment layer capable of aligning rod-like liquid-crystalline molecules in a direction parallel to a rubbing axis, and

(iv) a step of applying a composition comprising a rod-like liquid-crystalline compound to the rubbed surface of the second alignment layer and aligning rod-like molecules homogenously in a direction parallel to the rubbing axis of the second alignment layer, to prepare a second optically anisotropic layer generating substantially a phase difference of $\Pi/2$ at 550 nm,

wherein at least one of the rod-like liquid-crystalline compounds used in the first and second optically anisotropic layers is denoted by Formula (I) below:

Formula (I)

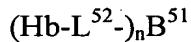


where Q^1 and Q^2 respectively denote a polymerizable group; L^1 and L^4 respectively denote a divalent linking group, L^2 and L^3 respectively denote a single bond or divalent linking group; Cy^1 , Cy^2 , and Cy^3 respectively denote a divalent cyclic group; and n is 0, 1 or 2.

Claim 7 (Canceled)

Claim 8 (Previously Presented): The process of claim 6, wherein at least one of the compositions for the first and second optically anisotropic layers comprises a compound denoted by Formula (V) below:

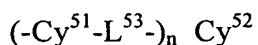
Formula (V)



where Hb represents a C6-40 aliphatic group, or oligosiloxanoxy group having a C6-40 aliphatic group; L⁵² is a single bond or divalent linking group; B⁵¹ is an n-valent group showing an excluded volume effect and comprising at least three rings and n is an integer from 2 to 12.

Claim 9 (Previously Presented): The process of claim 8, wherein B⁵¹ is an n-valent group denoted by Formula (V-a);

Formula (V-a)



where Cy⁵¹ is a divalent cyclic group; L⁵³ is a divalent linking group selected from the group consisting of a single bond, -alkylene-, -alkenylene-, -alkynylene-, -O-, -S-, -CO-, -NR-, -SO₂- and any combinations thereof; Cy⁵² is an n-valent cyclic group; and n is an integer from 2 to 12.

Claim 10 (Currently Amended): A circular polarizer comprising:
a linear polarizer film having a transparent axis substantially inclined at +45 degrees or -45 degrees relative to a longitudinal direction thereof,
a substrate having a longitudinal direction,
a first optically anisotropic layer formed of a composition comprising a rod-like liquid-crystalline compound, in which the rod-like molecules are aligned homogeneously, and substantially generating a phase difference of Π at 550 nm, and

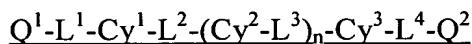
a second optically anisotropic layer formed of a composition comprising a rod-like liquid-crystalline compound, in which the rod-like molecules are aligned homogeneously, and substantially generating a phase difference of $\Pi/2$ at 550 nm;

wherein an in-plane slow axis of the first optically anisotropic layer and the longitudinal direction of the substrate cross substantially at +30 degrees, an in-plane slow axis of the second optically anisotropic layer and the longitudinal direction of the substrate cross substantially at -30 degrees, and the in-plane slow axis of the second optically anisotropic layer and the in-plane slow axis of the first optically anisotropic layer cross substantially at 60 degrees,

wherein a rubbing axis of an alignment layer for predetermining an orientation angle of the rod-like molecules in the first optically anisotropic layer and the longitudinal direction of the substrate cross substantially at +30 degrees, and a rubbing axis of an alignment layer for predetermining an orientation angle of the rod-like molecules in the second optically anisotropic layer and the longitudinal direction of the substrate cross substantially at -30 degrees, and

wherein at least one of the first and second optically anisotropic layers is formed of a composition comprising a rod-like liquid-crystalline compound denoted by Formula (I) below:

Formula (I)



where Q^1 and Q^2 respectively denote a polymerizable group; L^1 and L^4 respectively denote a divalent linking group, L^2 and L^3 respectively denote a single bond or divalent linking group; Cy^1 , Cy^2 , and Cy^3 respectively denote a divalent cyclic group; and n is 0, 1 or 2.

Claims 11 and 12 (Canceled)

Claim 13 (Previously Presented): The circular polarizer of claim 10, wherein at least one of the first and second optically anisotropic layers is formed of a composition comprising a compound denoted by Formula (V) below:

Formula (V)

$(Hb-L^{52}-)_nB^{51}$

where Hb represents a C6-40 aliphatic group, or oligosiloxanoxy group having a C6-40 aliphatic group; L⁵² is a single bond or divalent linking group; B⁵¹ is an n-valent group showing an excluded volume effect and comprising at least three rings and n is an integer from 2 to 12.

Claim 14 (Original): The circular polarizer of claim 13, wherein B⁵¹ is an n-valent group denoted by Formula (V-a);

Formula (V-a)

$(-Cy^{51}-L^{53}-)_n Cy^{52}$

where Cy⁵¹ is a divalent cyclic group; L⁵³ is a divalent linking group selected from the group consisting of a single bond, -alkylene-, -alkenylene-, -alkynylene-, -O-, -S-, -CO-, -NR-, -SO₂- and any combinations thereof; Cy⁵² is an n-valent cyclic group; and n is an integer from 2 to 12.

Claim 15 (Currently Amended): A process for preparing a circular polarizer comprising:

(i) a step of preparing a layer on or above a surface of a substrate having a longitudinal direction and rubbing a surface of the layer in a direction at +30 degrees relative to the longitudinal direction of the substrate, to prepare a first alignment layer capable of aligning rod-like liquid-crystalline molecules in a direction parallel to a rubbing axis,

(ii) a step of applying a composition comprising a rod-like liquid-crystalline compound to the rubbed surface of the first alignment layer and aligning rod-like molecules homogenously in a direction parallel to the rubbing axis of the first alignment layer, to prepare a first optically anisotropic layer generating substantially a phase difference of Π at 550 nm,

(iii-1) a step of preparing a layer on or above the surface of the substrate and rubbing a surface of the layer in a direction at -30 degrees relative to the longitudinal direction of the substrate, which corresponds to a direction crossing the rubbing axis of the first alignment layer at 60 degrees, to prepare a second alignment layer capable of aligning rod-like liquid-crystalline molecules in a direction parallel to a rubbing axis, or

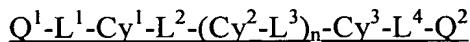
(iii-2) a step of preparing a layer on or above a rear surface of the substrate and rubbing a surface of the layer in a direction at +30 degrees relative to the longitudinal direction of the substrate, which corresponds to a direction crossing the rubbing axis of the first alignment layer at 60 degrees, to prepare a second alignment layer capable of aligning rod-like liquid-crystalline molecules in a direction parallel to a rubbing axis,

(iv) a step of applying a composition comprising a rod-like liquid-crystalline compound to the rubbed surface of the second alignment layer and aligning rod-like molecules homogenously in a direction parallel to the rubbing axis of the second alignment layer, to prepare a second optically anisotropic layer generating substantially a phase difference of $\Pi/2$ at 550 nm, and

(v) a step of laminating a linear polarizer film, having a transparent axis substantially inclined at +45 degrees or -45 degrees relative to a longitudinal direction thereof, on or above the surface or the rear surface of the substrate, so that the longitudinal directions of the linear polarizer film and of the substrate are identical,

wherein at least one of the rod-like liquid-crystalline compounds used in the first and second optically anisotropic layers is denoted by Formula (I) below:

Formula (I)



where Q^1 and Q^2 respectively denote a polymerizable group; L^1 and L^4 respectively denote a divalent linking group, L^2 and L^3 respectively denote a single bond or divalent linking group; Cy^1 , Cy^2 , and Cy^3 respectively denote a divalent cyclic group; and n is 0, 1 or 2.

Claim 16 (Original): The process of claim 15, wherein the first and second optically anisotropic layers are prepared on or above the surface of the substrate and the linear polarizer film is laminated on or above the surface of the substrate.

Claim 17 (Original): The process of claim 15, wherein the first and second optically anisotropic layers are prepared on or above the surface of the substrate and the linear polarizer film is laminated on or above the rear surface of the substrate.

Claim 18 (Canceled)

Claim 19 (Previously Presented): The process of claim 15, wherein at least one of the composition used for the first and second optically anisotropic layers comprises a compound denoted by Formula (V) below:

Formula (V)

$(Hb-L^{52}-)_n B^{51}$

where Hb represents a C6-40 aliphatic group, or oligosiloxanoxy group having a C6-40 aliphatic group; L⁵² is a single bond or divalent linking group; B⁵¹ is an n-valent group showing an excluded volume effect and comprising at least three rings and n is an integer from 2 to 12.

Claim 20 (Original): The process of claim 19, wherein B⁵¹ is an n-valent group denoted by Formula (V-a);

Formula (V-a)

$(-Cy^{51}-L^{53}-)_n Cy^{52}$

where Cy⁵¹ is a divalent cyclic group; L⁵³ is a divalent linking group selected from the group consisting of a single bond, -alkylene-, -alkenylene-, -alkynylene-, -O-, -S-, -CO-, -NR-, -SO₂- and any combinations thereof; Cy⁵² is an n-valent cyclic group; and n is an integer from 2 to 12.